PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

United States Patent and Trademark Office
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ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 07 January 1999 (07.01.99)	
International application No. PCT/CA98/00439	**Applicant's or agent's file reference** 29450-0002
International filing date (day/month/year) 06 May 1998 (06.05.98)	**Priority date** (day/month/year) 07 May 1997 (07.05.97)
Applicant BLAIR, Scott	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

07 December 1998 (07.12.98)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Yolaine CUSSAC

Telephone No.: (41-22) 338.83.38

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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
29450-0002		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA98/00439	06/05/1998	07/05/1997
International Patent Classification (IPC) or national classification and IPC H04N7/18		
Applicant BLAIR, Scott		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
07/12/1998	05.08.99
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. (+49-89) 2399-0 Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer Kauffmann, J Telephone No. (+49-89) 2399 8964

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA98/00439

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-13	as originally filed

Claims, No.:

1-16	as received on	25/05/1999	with letter of	25/05/1999

Drawings, sheets:

1/6-6/6	as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-16
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-16
Industrial applicability (IA)	Yes:	Claims	1-16
	No:	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Concerning point V of the international preliminary examination report:

Prior art document FR,A,2652701 cited in the International Search Report discloses (see in particular page 1, lines 8 to 21, page 4, lines 154 to 157, and page 4, line 165 to page 5, line 169; claims 1 and 2) a video system for displaying televised material to passengers in a mass transit transport system such as a plane, train or bus, and comprising a plurality of video display monitors, at spaced intervals and which may comprise individual monitors combined with a common monitor (see page 2, lines 64 to 68), the video system being adapted for mounting inside a plane, train car or bus so as to display televised material to passengers riding therein, and comprising a video signal source, e.g. a satellite receiver, a video tape recorder or video disc system operatively connected to said at least one monitor.
The video system defined in claim 1 of the present application differs from the video system disclosed in FR,A,2652701 only in that it is installed in a subway system, and such that the monitors are placed along the upper portion of the sidewalls of the subway car at the location where the sidewalls adjoins the ceiling, the screens of the monitors being directed obliquely downwardly towards the car seats.

The subject-matter of claim 1 is thus new vis-à-vis the art known from FR,A,2652701, in the sense of Article 33(2) PCT.

However, these differences do not confer onto claim 1 any element of inventive significance vis-à-vis the art known from FR,A,2652701, since a subway car or carriage is essentially a train carriage, and a skilled person would readily realise that the teachings of FR,A,2652701 are equally applicable to any mass transport system. Thus a skilled person confronted with the problems addressed in the present application in connection with a subway system would immediately realise that the solution provided in FR,A,2652701 to the same problems in connection with other mass transportation systems such as trains is equally applicable to a subway system.
Furthermore, a skilled person confronted with the problem of having to locate the display monitors would evidently envisage any location, in the subway (or other train) car which provides optimum passenger coverage according to normal design considerations, such as available mounting space, location of the passengers seats, light conditions, etc... (see in that respect also FR,A,2652701).
In that respect, it is to be noted that claim 1 is silent as to any specific

conditions/features relating to the subway car in which the video system is to be installed.
Installing the display monitors along the upper portion of the sidewall at the location where the sidewall adjoins the ceiling is no more than a simple alternative to other mounting places, such as the middle of the ceiling, or on separating walls of the train carriage if present, or above the seats, or in the seat backs. A skilled person would obviously envisage to locate the display monitors in the manner claimed in claim 1 according to features defining the subway car, such as e.g. the arrangement of passenger seats.
It is to be noted that directing the display screen obliquely downwards in such a case is no more than a straightforward, common and obvious measure the adoption of which lies within the normal design competence of a skilled person. It is common in the field of displays to place the screen so as to optimize visibility thereof, in placing it so that any potential viewer can face it. Considering that the passengers in a subway car are generally located below the ceiling /sidewall line of the subway car, it seems obvious that directing the screens downwardly (towards the passengers line of sight) improves the visibility thereof.
In conclusion, in the absence of any specific features in claim 1 susceptible to define a specific adaption of the display monitors system to a specific subway car, the system defined in claim 1 does not reveal any feature representing an inventive contribution to the art known from FR,A,2652701 and the general knowledge and competence of a skilled person.

Claim 1 therefore lacks inventive step in the sense of Article 33(3) of the PCT.

Considering the teachings of EP,A,0577054 instead of those of FR,A,2652701 leads to the conclusion that the subject-matter of claim 1 is new but lacks inventive step vis-à-vis the art known from that document (see in particular column 1, lines 5 to 11 and 22 to 34; column 2, lines 20 to 28 and 37 to 43; column 3, line 51 to column 4, line 7 and column 10, lines 8 to 15 of EP,A,0577054).

Similar considerations lead to the same conclusions for independent claim 9 which defines a subway car. Actually, claim 9 is silent as to specific features defining a subway car, or as to features distinguishing a subway car from e.g. a train carriage. The only features mentioned in that claim relate to the video system installed in the

subway car for which protection is sought.
In that respect, it is also to be noted that, as is the case for claim 1, claim 9 is silent as to any specific adaption of the video system to a subway car.

None of the dependent claims presently on file seems to reveal a feature susceptible to confer onto the subject-matter of claim 1 or claim 9 inventive step vis-à-vis the art known from the prior art documents identified above or common knowledge of a skilled person.The features recited in the dependent claims relate to common and known implementations of video systems, or to simple measures a skilled person would envisage to take without having to exercise any activity of inventive significance.
By way of example, reference is made to claims 2 and 7.
Providing a video source in the form of a video tape player, a video disk player or a computer based digital video recorder is common in the art of video distribution. Using displays in the form of LCD screens as indicated in claim 7 is also a common measure known in the art. These features are also known from EP,A,0577054 (see e.g. column 1, line 14 to column 2, line 48 and column 4, lines 28 to 31) or from FR,A,2652701 (see e.g. page 3, lines 87 to 94, claims 1 and 3).

Consequently, claims 2 to 8 and 10 to 16 do not meet the requirements of Article 33(3) of the PCT.

All claims meet the requisite of industrial applicability in the sense of Article 33(4) PCT, since video systems find wide use in many technical fields, such as e.g. television, advertisement, information techniques.

Concerning point VII of the international preliminary examination report::

Independent claims 1 and 9 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would seem to be appropriate, with those features known in combination from the prior art (preferably a document cited in the International Search Report) being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT).
Also, the relevant background art disclosed in the documents identified in the International Search Report is not mentioned in the description, nor are these documents identified therein.

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
29450-0002		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/CA 98/ 00439	06/05/1998	07/05/1997
Applicant		
BLAIR, Scott		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [ ] **Certain claims were found unsearchable** (see Box I).

2. [ ] **Unity of invention is lacking** (see Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
   - [ ] filed with the international application.
   - [ ] furnished by the applicant separately from the international application,
     - [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
   - [ ] Transcribed by this Authority

4. With regard to the **title,**
   - [X] the text is approved as submitted by the applicant
   - [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   - [ ] the text is approved as submitted by the applicant
   - [X] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:
   Figure No. 2
   - [X] as suggested by the applicant.
   - [ ] because the applicant failed to suggest a figure.
   - [ ] because this figure better characterizes the invention.
   - [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

[redacted]ational application No.
PCT/CA 98/ 00439

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The abstract is to amended as follows :

line 1 : after "cars" insert "(10")

line 2 : after "monitors" insert "(22")

line 3 : after "cars" insert "(10")

line 4 : after "unit" insert "(23")

line 7 : after "monitors" insert "(22")

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 98/00439

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N7/18

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N

Documentation searched other than minimumdocumentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 577 054 A (HUGHES-AVICOM INTERNATIONAL) 5 January 1994 see the whole document ---	1,10
A	FR 2 652 701 A (COMERZAN SORIN) 5 April 1991 see the whole document -----	1,10

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publicationdate of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of theinternational search	Date of mailing of the international search report
12 August 1998	20/08/1998

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Verleye, J

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/CA 98/00439

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 577054 A	05-01-1994	US 5311302 A	10-05-1994
		DE 69317475 D	23-04-1998
		JP 6282377 A	07-10-1994
FR 2652701 A	05-04-1991	NONE	

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
H04N 7/18

A1

(11) International Publication Number: WO 98/51081

(43) International Publication Date: 12 November 1998 (12.11.98)

(21) International Application Number: PCT/CA98/00439

(22) International Filing Date: 6 May 1998 (06.05.98)

(30) Priority Data:
60/045,811 7 May 1997 (07.05.97) US

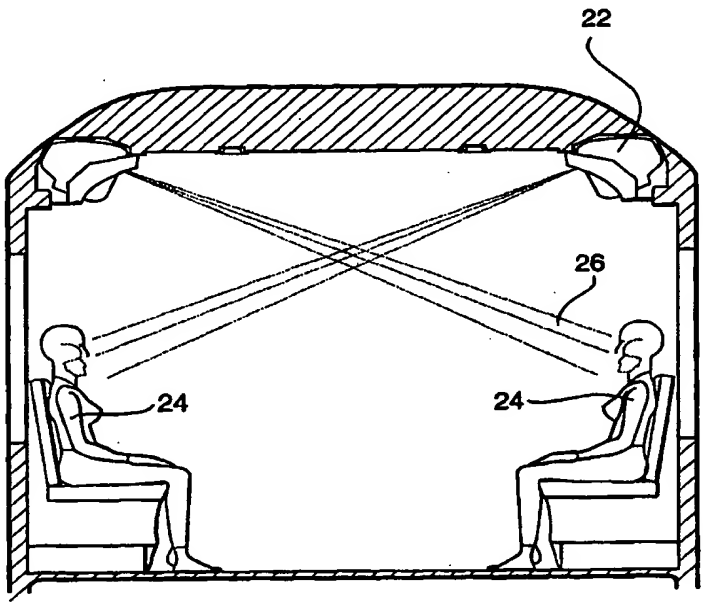
(71)(72) Applicant and Inventor: BLAIR, Scott [CA/CA]; 32 Marlow Avenue, Toronto, Ontario M4J 3T9 (CA).

(74) Agent: RIDOUT & MAYBEE; 18th floor, 150 Metcalfe Street, Ottawa, Ontario K2P 1P1 (CA).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: SUBWAY TV MEDIA SYSTEM



(57) Abstract

A television system for subway cars (10) includes a plurality of TV monitors (22) mounted at intervals along the cars (10), at the junction of the sidewall and the ceiling, and a central video signal source unit (23) such as a video tape player, video disk player, computer-based digital video recorder or television receiver, connected to the video monitors (22). Programs of short duration, e.g. 5–15 minutes, matching the average length of a subway ride, and comprising advertising messages, news bytes and the like are played and displayed in the monitors repeatedly during the subway ride.

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SUBWAY TV MEDIA SYSTEM

This invention relates to video display systems, and more specifically to video display systems mounted in and operating in mass transit subway cars.

It is commonplace to provide visual advertising displays such as posters in mass transit subway cars, where the displays are available for reading by subway passengers during travel. It is also known to equip subway cars with closed circuit television cameras, for surveillance of passenger behaviour and other safety checks. Images of such surveillance are either displayed at a central security facility, or recorded for subsequent viewing in the event of safety problems.

It is also commonplace to equip subway cars with audio public address systems for a myriad of uses, including transit service announcements, community service events, advertising, safety and emergency procedures, as well as inter-staff communications.

Proposals have been made previously to equip other transportation items, especially aircraft, with television or video systems, primarily for the entertainment of passengers on long journeys. Examples of such systems in the patent literature can be found in U.S. Patent 4,647,980 Steventon et al., U.S. Patent 4,630,821 Greenwald, U.S. Patent 4,352,124 Kline, U.S. Patent 5,123,728 Gradin et al., and U.S. Patent 3,457,006 Brown et al.

Entertainment of passengers on subway cars has until now generally been ignored, since the average journey taken by a passenger on a mass transit subway system is usually short, lasting perhaps fifteen minutes.

Nevertheless, subway transit riders offer an attractive audience for visual advertising messages, as evidenced by the proliferation of advertising signs which commonly adorn a subway car. In addition, mass transit systems such as subways are in need of extra sources of revenue, to keep passenger fare structures at an affordable level as operating costs rise, and to avoid decreased ridership as a result.

It is an object of the present invention to provide a public service message display system, entertainment system and advertising system for mass transit subway cars.

It is a further object to provide a novel source of extra revenue for a mass transit subway system.

The present invention provides a television public service message display, entertainment and advertising system for subway cars, in which television monitors are provided at spaced intervals in subway cars, to display short duration televisual entertainment and advertising features to subway riders. The system is designed so that advertising spots on it can be sold by the transit system to potential advertisers and sponsors, for extra revenues for the transit system. It takes advantage of the fact that subway riders are, for the most part, occupying a subway car under relatively crowded conditions but for only a relatively brief duration. They are looking for something on which to focus their attention during their brief ride, whilst at the same time often finding it inconvenient to open newspapers, magazines or the like under crowded circumstances and becoming bored by static advertising or other displays around them. The present

invention provides properly positioned television monitors displaying moving images of news items, advertising material and the like, viewable by substantially all riders in the car, and filling their need for visual entertainment during the brief duration of their subway ride.

Thus, according to the present invention, from one aspect, there is provided a video system for displaying televised material to passengers in a mass transit subway car, and comprising at least one video display monitor adapted for mounting inside a subway car so as to display televised materials to passengers riding therein, and a video signal source unit operatively connected to said at least one monitor.

According to a second aspect of the present invention, there is provided a subway car for mass transportation and comprising a video display system including at least one video display monitor having a video screen, the monitor being mounted in the subway car in a manner such that the video screen thereof is readily visible to passengers in the subway car, and a video signal source unit operatively connected to said at least one monitor.

The term "video signal source unit" as used herein embraces player units for playing pre-recorded video material, such as computer-based digital video recorders (including CD-ROM players), video tape players and video disk players, and television receivers for receiving live or pre-recorded broadcast television signals from a remote transmitter and supplying these to the video display monitors mounted in the subway cars. One system according to the invention utilizes receivers including computer-

based digital video recorders for receiving broadcast television signals from a remote transmitter as the video signal source unit. Such video signal source unit can be located either within the mass transits' premises or on a remote broadcasting site. Alternatively, the invention utilizes a video tape player, a video disk player, or a computer-based digital video recorder, as the video signal source unit. The video signal source unit may be located in the same subway car as that in which the monitor or monitors are located, or in adjacent or remote cars of the same train, with the necessary operative connection between the player and the monitor(s). An individual subway car can be equipped with its own video signal source unit, connected to a plurality of monitors mounted at different, appropriately chosen locations along the length of the subway car. Alternatively, one central video signal source unit can be located in one car of subway train, and connected to monitors in some or all of the cars of the train, to provide a central video signal source unit for the train.

Computer (PC) based digital video recorders basically transmit video signals from a hard drive or CD-ROM storage. They are however also capable of receiving transmitted input at intervals, e.g. news item updates, at, say, hourly intervals, to add to their stored transmittable video data. In this sense they also act as television receivers.

The video signal source unit and video display monitors used in the present invention can be of known, standard form, obtainable as off the shelf items from manufacturers and sales outlets. The connections between them, for display of televised material, are also standard

and well within the skill of the art. For example, use can be made of the existing subway infrastructure by which audio announcements are currently transmitted. Alternatively, the connections may be by use of coaxial cables, fibre optics, cell phone systems or satellite transmission, or by other appropriate means.

A preferred system according to the invention is a subway car or plurality of subway cars equipped with a plurality of television monitors, especially LCD-based television monitors, and a video signal source comprising a video tape player, video disk player or computer-based digital video recorder, the video signal source and the monitors being interconnected by suitable electrical cable systems which are self-contained within the subway car. In this way, new subway cars can be built with the video system or parts thereof installed, and usable on substantially any transit system, since the operation of the video system is independent of any previously installed track, tunnel or control systems.

The video system according to the present invention provides a means for communicating a very wide range of information to viewers in an environment ideally suited to communicating short video messages to viewers, especially commercial messages or sponsored community service, or informational news bytes. Most subway rides are of short duration, e.g. 15-30 minutes or less. It is normally undesirable to play television programs of any significant length to subway passengers for fear of distracting them from their proper points of interchange and disembarkation on the subway system. However, the system according to the invention is ideally suited for displaying a series of short, 30 second - 1 minute

messages, in sequence, such as a series of commercial messages. These can range from straightforward advertising as seen on commercial television, or the type of news feed with corporate sponsorship as seen by cable television viewers, with news services provided by specialized companies in this business. If the information is delivered by video tape player, video disk player or computer-based digital video recorder, it can be repeated at intervals of, say, 5-15 minutes, based upon the average duration of individual subway rides, i.e. the pre-recorded program is of total duration of about 5-15 minutes. If the feed is delivered from an outside source, its delivery depends on the package of the server, and according to agreement between the purchaser and the mass transit management, and other interested parties as necessary.

Typically, the television images displayed by the monitors of the system according to the invention do not incorporate sound, though they may contain rolling script, similar to cable television news channels, or similar to closed-captioning for the hearing impaired. This avoids risk of interference with announcements being played to passengers through the normal audio address system carried by the subway train, and avoids adding to the general noise level experienced by passengers on the subway cars, a noise level which is commonly quite high even under normal running conditions. However, sound may be incorporated where appropriate, for example in safety or emergency situations, or to mark the beginning of a message to which the subway or transmission provider wishes to call attention.

The manner in which the video display monitors are disposed and mounted in the subway car depends to some

extent on the design of the subway car itself. Such designs can vary between different subway systems. Normally from 6-12 such colour monitors are provided in each subway car, suitably of 12"-13" size, spaced along the length of the car, and disposed above the windows of the car, in a manner and at a location which does not interfere with the operation of any other essential element of the car (door operation, lights, heating, air conditioning etc.). A subway car is normally constructed so that it has a cavity wall, defined between its outer structural shell and its inner lining wall, the cavity providing for wiring and cables and other mechanical functions, and, at places, containing insulation. The video display monitors in the system of the invention are suitably mounted in the cavity wall.

In a preferred arrangement, the video display monitors have a strong metal frame construction, fixed to the frame of the subway car. The screens are preferably covered with a rigid transparent unit, e.g. of polycarbonate, shaped to coincide with the shape of the internal wall of the subway car at the location of mounting. For example, when the monitor is mounted at the junction of the wall and ceiling of the subway car, where there is commonly provided a concavely curved segment of internal wall, the transparent cover unit is suitably similarly concavely curved, so that it can be mounted as a continuum with the internal walls and blended to contours thereof, with the monitor mounted behind it. The screen is suitably angled downwardly, for best viewing by passengers seated opposite the screen. The entire structure of the monitor, including the cover unit if used, is suitably housed in a stainless steel or strong plastic casement, designed to appear integral with the subway car, without

visible edges or protuberances, and matching the materials and colours of the subway car interior.

The video monitors used in the system of the present invention can be of standard, cathode ray tube-based design. Such monitors have the advantage of economy, being mass-produced items manufactured on a very large scale. They are eminently suitable for use in most embodiments according to the invention, and can be viewed clearly from a variety of angles. However, in circumstances where the subway car in operation encounters locations of large magnetic field, it is possible that the picture displayed on a CRT monitor will be distorted as the monitor moves through such location. Any such distortion effect can be reduced by surrounding the monitor, to an extent practical and consistent with its provision of full visual display, with an appropriate shield such as a steel or other ferromagnetic casement. Where such a magnetic field problem turns out to be particularly acute, the CRT-type monitor may be replaced by a monitor incorporating a colour liquid crystal display (LCD) screen, which is not sensitive to intermittent encountering of external magnetic fields.

Specific preferred embodiments of the present invention are illustrated in the accompanying diagrammatic drawings in which:

Figure 1 shows in plan view (Fig. 1A) and in side elevation (Fig. 1B), an existing subway car as used on the Toronto Transit System with indications of appropriate locations for mounting video monitors according to the invention;

Figure 2 is a sectional view of a subway car according to the invention with video monitors in place;

Figure 3 is a detail, in section, of an existing subway car illustrating the location for receiving a video monitor according to the invention;

Figure 4 is a detail similar to Fig. 3, with the video monitor in place;

Figure 4A is a view, similar to Fig. 4, of an alternative embodiment;

Figure 5 is a detail in perspective view, of a subway car equipped with a monitor according to one embodiment of the invention;

Figure 6 is a detail similar to Fig. 5 but of a further alternative embodiment;

Figure 7 is a view similar to Figure 6, showing the general appearance when the monitor is operating.

A typical subway car 10, as illustrated in Figs. 1A and 1B, is equipped with sliding doors 12 and windows 14, spaced at convenient intervals along the length of the car. Passenger seats, in sets of 2's and 3's, are disposed beneath and alongside the windows 14, clear of the doors 12, some sets 16 being inward facing, other sets 18 being forward facing and other sets 20 being rearward facing.

Suitable locations for video monitors 22 in accordance with the invention are at the junction of wall and ceiling of subway car 10, above the windows 14 and

clear of the doors 12. They are thus disposed opposite to sets of inward facing seats 16, and angled downwardly for ease of viewing of passengers 24 seated in such inward facing seats 16, as shown in Fig. 2, with direct sight lines 26, but visible to passengers seated elsewhere, and standing in the car 10. A video player 23 is suitably located in the driver's cab 27 (Fig. 1A), and connected to all the monitors 22 by cables (not showing) disposed in the cavity walls of the car.

Fig. 3 shows a detail of the car 10, at the location where a monitor 22 is to be installed. The car wall has an outer shell 28 in which windows 14 are sealingly mounted, and structural pillars 30 mounted at intervals and secured to the vertical structural member 32. Centrally secured to the exterior skin and body structure of body 34 of the car is a main air duct 36 and a housing 38 carrying ceiling lights running substantially the full length of the car 10. The space between the ceiling housing 38 and the top of the pillars 30 is normally occupied by back lit advertising panels 40. Removal of appropriate portions of these panels 40 provides space for location of video monitors 22, according to the preferred embodiment of the invention.

Thus as shown in Fig. 4, the video monitor 22 is enclosed and rigidly mounted in its own enclosure 42, of stainless steel, rigid plastic or the like. The enclosure in turn is secured to the top of structural pillar 30 and the side of housing 38, in a space between the ends of illuminated panels 40, and protruding rearwardly to a position adjacent the outer part of the exterior skin and body structure 34. The front wall of enclosure 42 is comprised of a clear transparent polycarbonate shield 44,

through which the screen 46 the monitor 22 is clearly visible. The screen 46 is angled downwardly for best viewing by a passenger 24 seated opposite. The enclosure 42 with monitor 22 therein and connections protruding outwardly therethrough is removable as a unit, for replacement or service.

An alternative embodiment is illustrated in Fig. 4A, a view similar to that of Fig. 4. In this alternative embodiment, CRT video monitor 22 is replaced with an LCD-based video monitor 22A which is of thin, rectangular cross-section, and occupies less space in the ceiling structure of the car. Accordingly, it can be moved towards the ceiling so that its viewing screen is substantially flush with or even behind the light panel 40. This use of an LCD-based monitor gives a better aesthetic appearance to the inside of the subway car as a whole, as well as improving the display performance by minimizing the interference effects, as previously discussed. An appropriately shaped enclosure 42A for the LCD-based monitor, with transport screen 44A, replaces enclosure 42 for the CRT video monitor, and is similarly mounted in place.

Fig. 5 shows a front, perspective view of the arrangement shown in section in Fig. 4. The monitor 22 and its covering shield 44 are recessed behind the upper portion of the adjacent advertising panels 40, and the sides of the enclosure 42 protrude inwardly from the lower portion of panels 40. This provides ease of access to the enclosure 42 for its removal when necessary.

An alternative arrangement is shown in Fig. 6. Here the polycarbonate shield 44 is convexly curved, and is

disposed further forward from the monitor screen 44. The shield 44 now blends with forward facing part 48 the exterior skin and body structure 34, to provide a perhaps more aesthetically appealing arrangement. In Fig. 7, there is diagrammatically illustrated the arrangement of Fig. 6 in practical operation. Poster-type illuminated advertisements are provided by advertising panels 40 flanking the video monitors 22, whilst the video monitor 22, disposed at intervals along the length of the car 10, show video information and/or advertising spots, at convenient, easily viewed locations and disposition to passengers riding in the car 10.

It will be appreciated that the specific embodiments illustrated and described herein are by way of example only, and are not to be construed as limiting on the scope of the invention. The description pertains specifically to the type of subway car currently in use in the Toronto Transit System, and illustrates a means and location for mounting the video monitors in such a system. Details of construction, and hence details of appropriate mounting for video monitors may differ from subway system to subway system according to the form of car in use. Such mounting details do not depart from the scope of the present invention. In all cases, it is contemplated that a plurality of monitors will be provided in each car, each rigidly mounted at a convenient location clear of the doors and windows, and at a disposition where it can be viewed by passengers riding the subway car, without difficulty. The provision of such video monitors mounted in their own enclosures as described herein, and faced with a transparent screen of, for example, polycarbonate, allows for considerable variation in the detail of mounting means and locations, to adapt them to different constructions of

subway cars currently in use on different mass transit systems.

CLAIMS:

1. A video system for displaying televised material to passengers in a mass transit subway system, and comprising at least one video display monitor adapted for mounting inside a subway car so as to display televised material to passengers riding therein, and a video signal source unit operatively connected to said at least one monitor.

2. The video system of claim 1 comprising a plurality of video display monitors operatively connected to a single video signal source unit.

3. The video system of claim 2 wherein the video signal source unit comprises a video tape player, or video disk player or computer-based digital video recorder.

4. The video system of claim 3 wherein the video signal source system includes a pre-recorded video transmission program for feeding to display on the monitors of duration about 5-15 minutes.

5. The video system of claim 4 wherein the program is repeatable, and includes a series of commercial messages of 30 second - 1 minute duration.

6. The video system of any preceding claim wherein the video monitors are secured to the subway car at a location of junction between wall and ceiling of the car, with the screens of the monitors directed obliquely downwardly towards the car seats.

7. The video system of any preceding claim which is sound free.

8. The video system of claim 1 or claim 2 wherein the video source unit is a television receiver for receiving broadcast television signals from a remote transmitter and supplying the signals to the video display monitors.

9. The video system of any preceding claim, in which the video display monitors include LCD screens.

10. A subway car for mass transportation and comprising a video display system including at least one video display monitor having a video screen, the monitor being mounted in the subway car in a manner such that the video screen thereof is readily visible to passengers in the subway car, and a video signal source unit operatively connected to said at least one monitor.

11. The subway car of claim 10 including a plurality of said monitors, spaced along the length of the car on opposed sides thereof.

12. The subway car of claim 11 including longitudinal opposed sidewalls and a ceiling adjoining the sidewalls, and wherein each said monitor is mounted at the junction of the sidewall and ceiling, with the screens of the monitors directly obliquely downwardly towards the car seats.

13. The subway car of claim 12 wherein the video monitor screen is substantially flush with the adjacent wall surface structure of the car.

14. The subway car of any of claims 10-13 wherein the video signal source unit comprises a video tape player, a video disk player or computer-based digital video recorder.

15. The subway car of any of claim 10-14 wherein the video monitors include LCD screens.

16. The subway car of any of claims 10-15 including a self-contained wiring-cabling system connecting the video monitors to the video signal source unit.

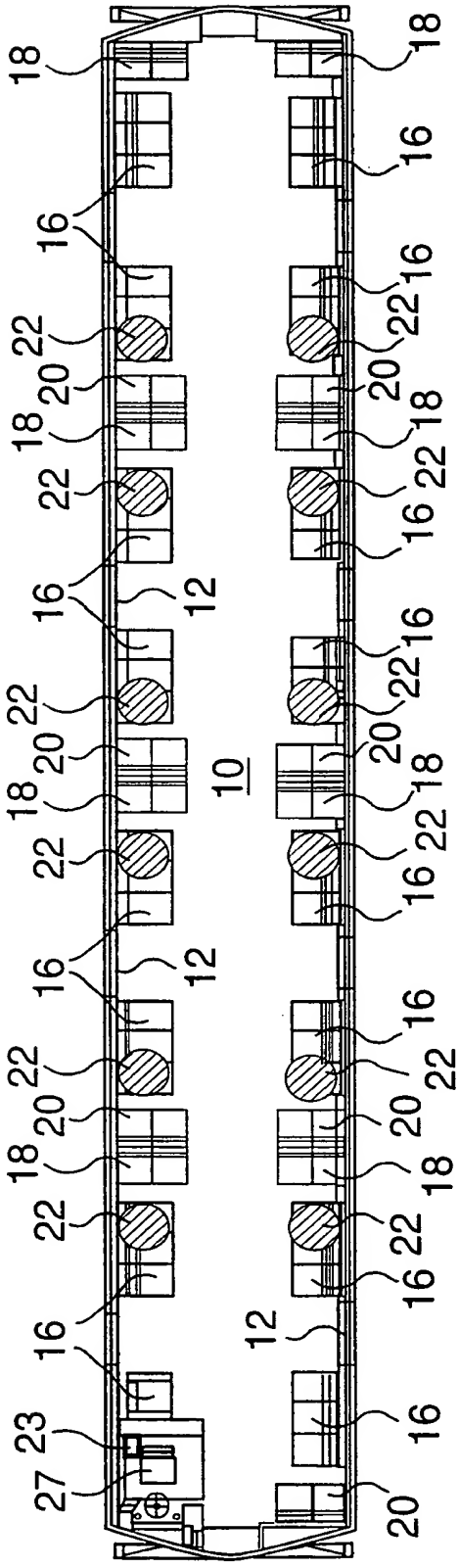

FIG. 1a

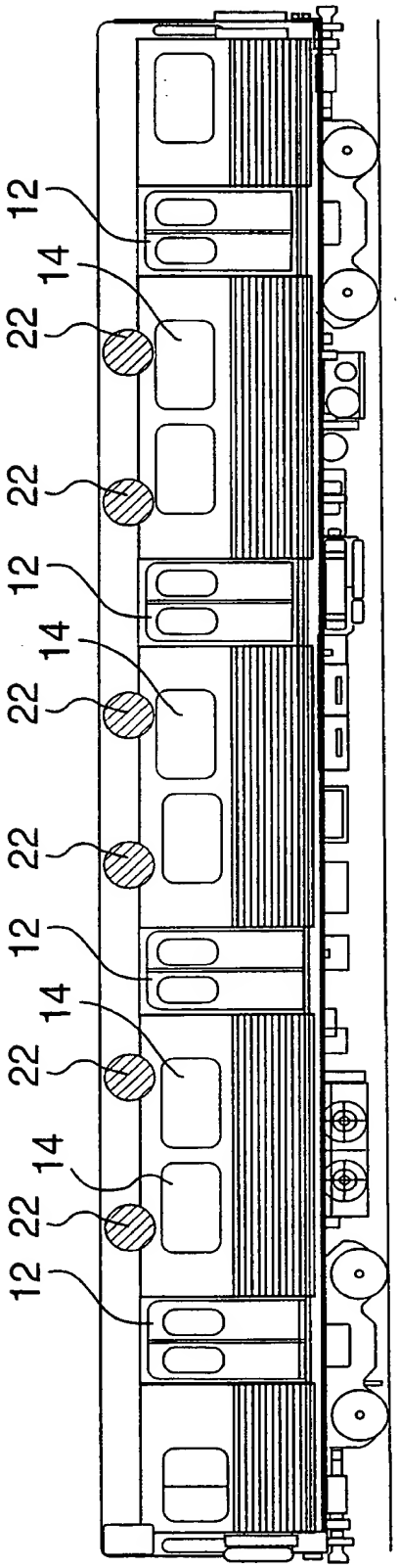

FIG. 1b

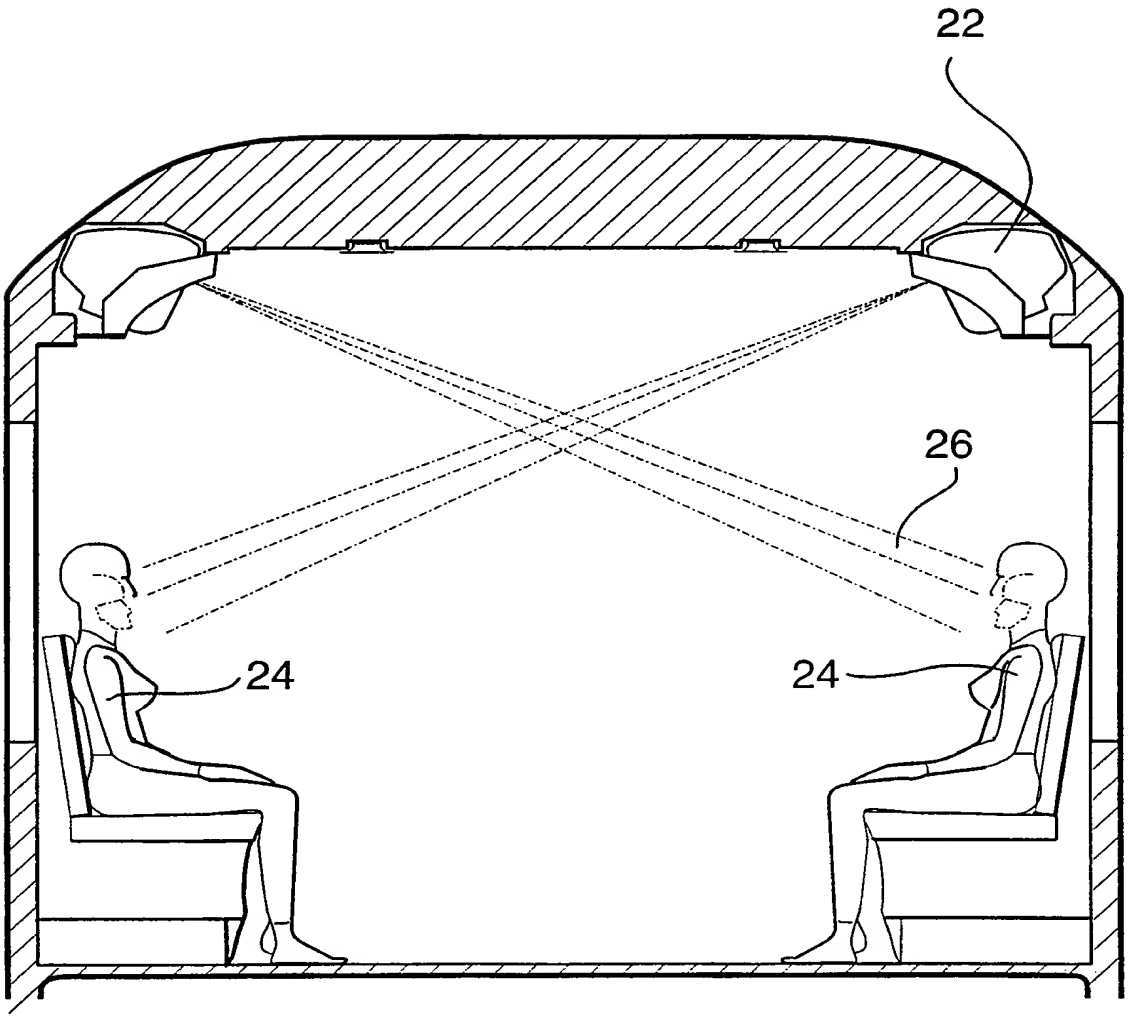

FIG.2

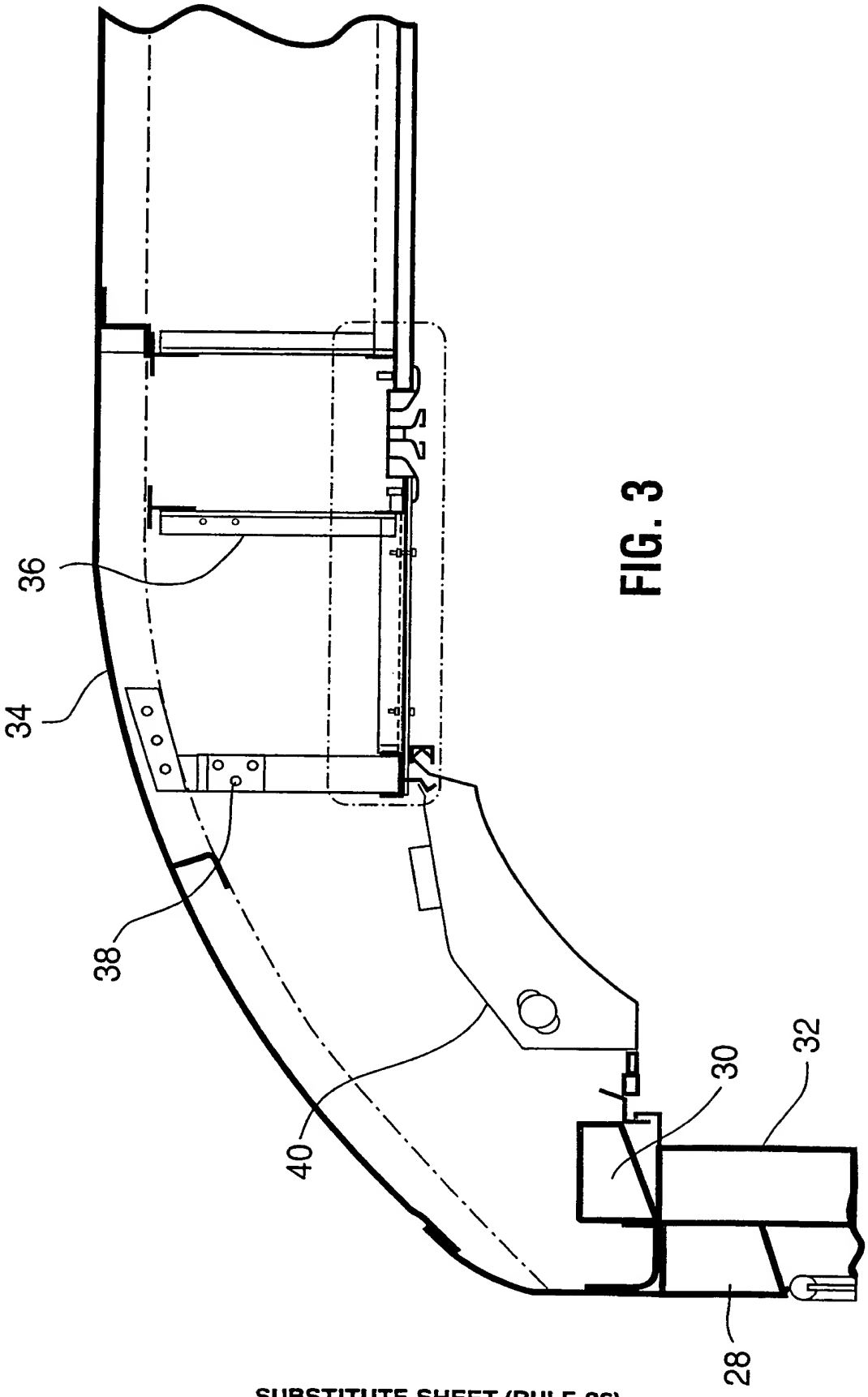

FIG. 3

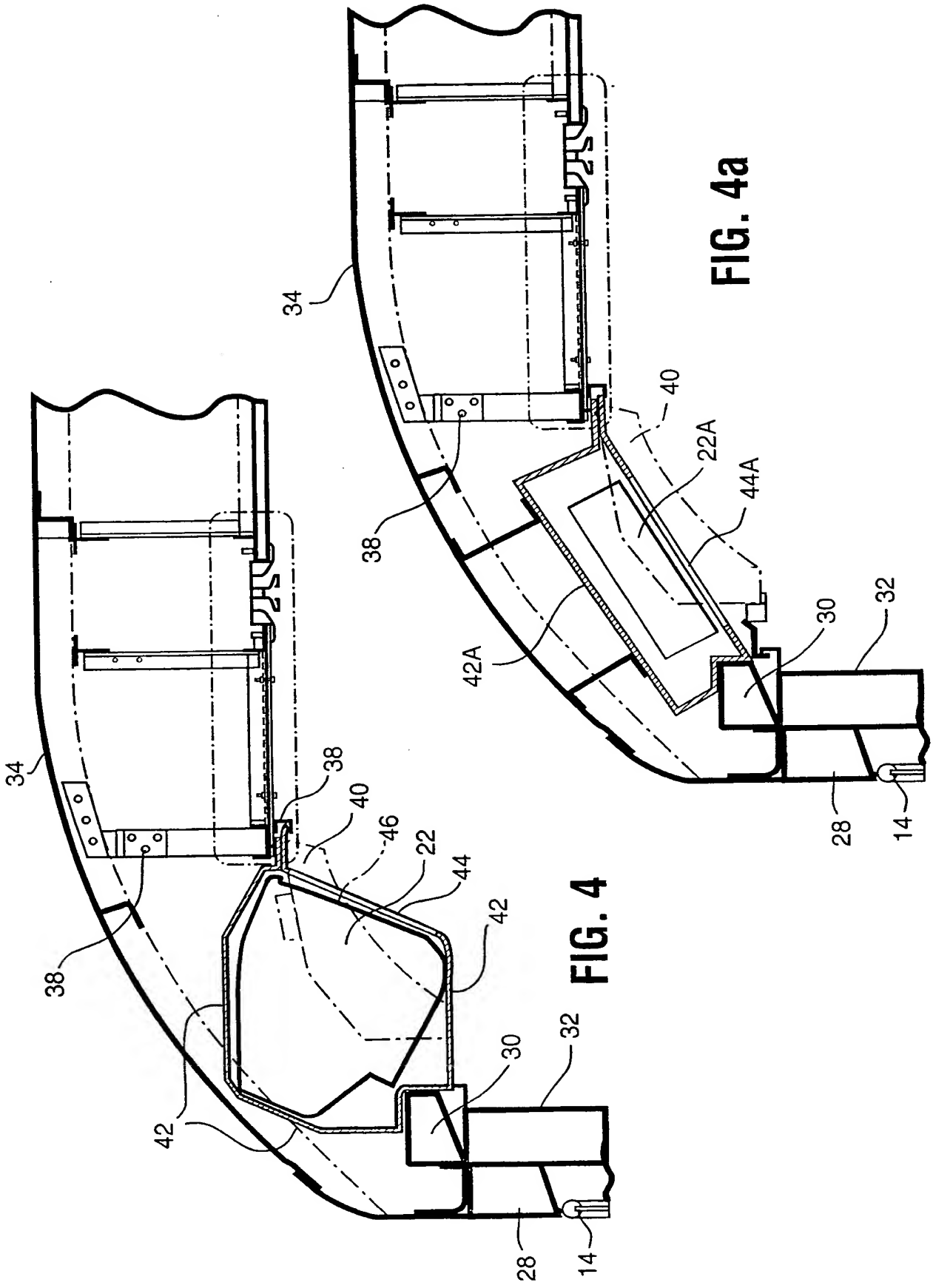

FIG. 4a

FIG. 4

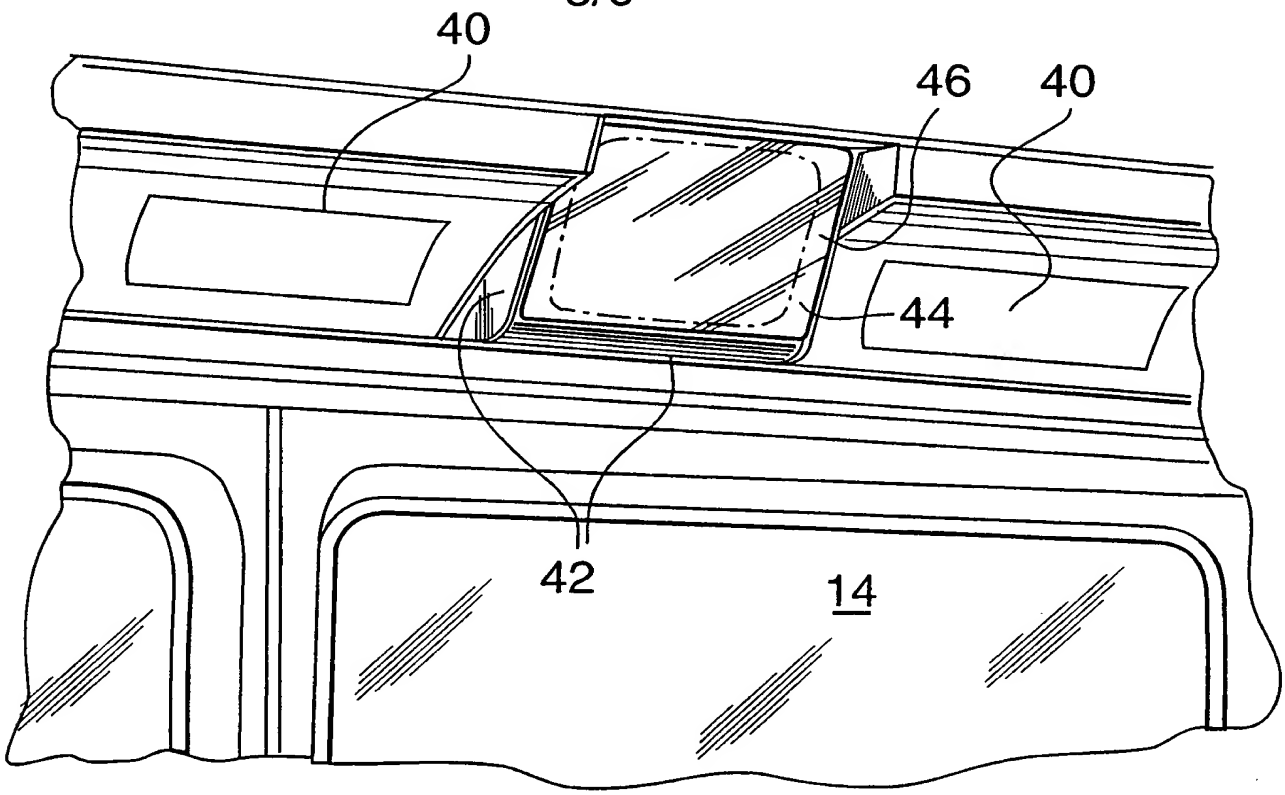

FIG. 5

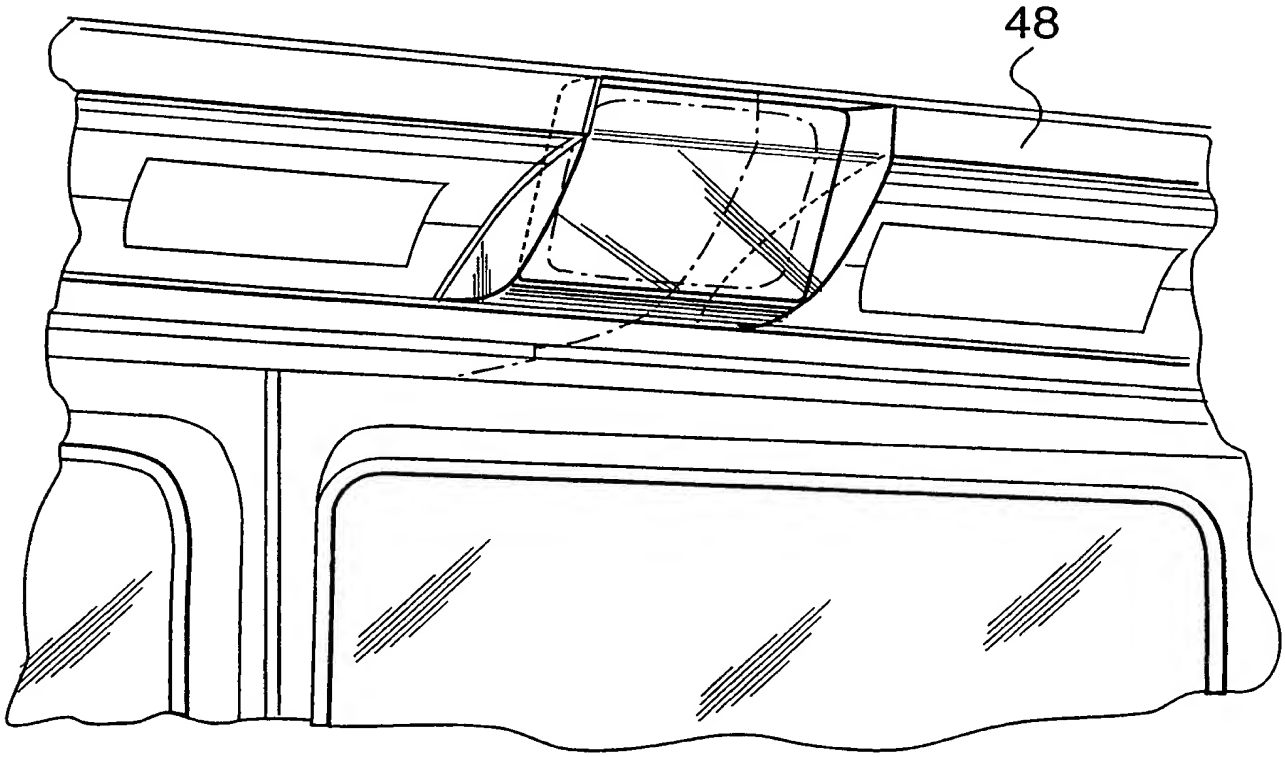

FIG. 6

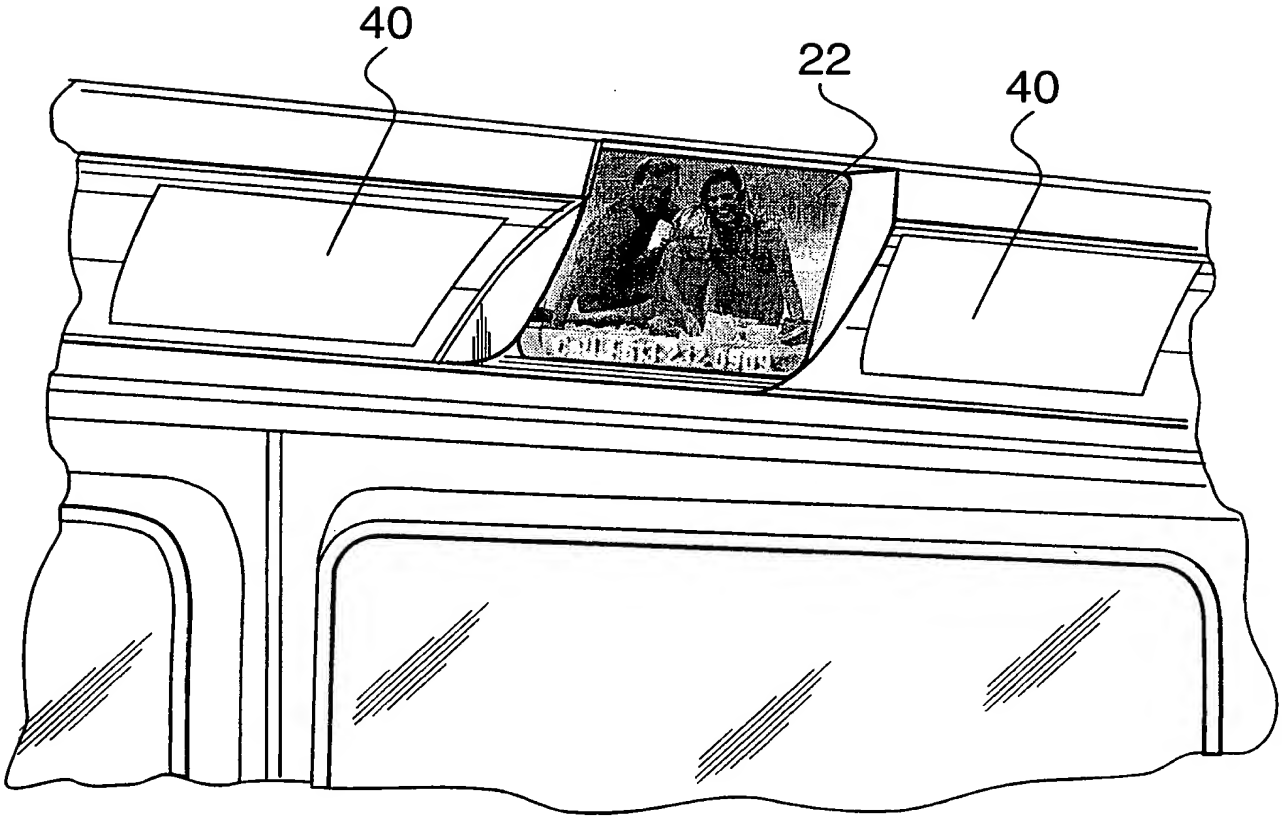

FIG. 7

INTERNATIONAL SEARCH REPORT

Ir. ...ional Application No
PCT/CA 98/00439

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N7/18

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N

Documentation searched other than minimumdocumentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 577 054 A (HUGHES-AVICOM INTERNATIONAL) 5 January 1994 see the whole document ---	1,10
A	FR 2 652 701 A (COMERZAN SORIN) 5 April 1991 see the whole document -----	1,10

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publicationdate of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of theinternational search	Date of mailing of the international search report
12 August 1998	20/08/1998

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Verleye, J

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Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int[redacted]tional Application No
PCT/CA 98/00439

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 577054 A	05-01-1994	US 5311302 A	10-05-1994
		DE 69317475 D	23-04-1998
		JP 6282377 A	07-10-1994
FR 2652701 A	05-04-1991	NONE	

SUBSTITUTE CLAIMS

1. A video system for displaying televised material to passengers in a mass transit subway system, and comprising a plurality of video display monitors adapted for mounting inside a subway car at spaced intervals along the upper portion of the sidewalls of the subway car at the location where the car sidewall adjoins the ceiling, with the screens of the monitors directed obliquely downwardly towards the car seats, so as to display televised material to passengers riding therein, and a video signal source unit operatively connected to said monitors.

2. The video system of claim 1 wherein the video signal source unit comprises a video tape player, or video disk player or computer based digital video recorder.

3. The video system of claim 1 or claim 2 wherein the video source unit includes a pre-recorded video transmission program for feeding the display on the monitors of duration about 5-15 minutes.

4. The video system of any preceding claim wherein the program is repeatable, and includes a series of commercial messages of 30 second - 1 minute duration.

5. The video system of any preceding claim which is sound free.

6. The video system of any preceding claim wherein the video source unit is a television receiver for receiving broadcast television signals from a remote transmitter and supplying the signals to the video display monitors.

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7. The video system of any preceding claim in

which the video display monitors include LCD screens.

8. The video system of any preceding claim wherein each said video display monitor is contained in a housing secured at said location to the subway car but removable as a unit with the video display monitor, the front of said housing comprising a transparent shield overlying the video display monitor screen.

9. A subway car for mass transportation, the car having longitudinal opposed sidewalls and a ceiling adjoining the sidewalls and including a video display system comprising a plurality of video display monitors having video screens, the monitors being mounted in spaced-apart relationship along the subway car, at the upper portions of the sidewalls of the subway car at the location where the car sidewall adjoins the car sealing, with the screens of the monitors directed obliquely downwardly towards the car seats, and a video signal source unit operatively connected to said monitors.

10. The subway car of claim 9 wherein the video monitor screens are substantially flush with the adjacent wall surface structure of the car.

11. The subway car of claim 9 or claim 10 wherein the video signal source unit comprises a video player, a video disk player or computer-based digital video recorder.

12. The subway car of any of claims 9-11 wherein the video monitors include LCD screens.

13. The subway car of any of claims 9-12

AMENDED SHEET

including a self-contained wiring-cabling system connecting the video monitors to the video signal source unit.

14. The subway car of any of claims 9-13 wherein the sidewalls and the ceiling thereof are cavity walls having inner and outer shells, the video display monitors being mounted in the cavity formed between the inner and outer shells.

15. The subway car of claim 14 wherein the self-contained wiring-cabling system connecting the video monitors to the video signal source unit is disposed within the cavity walls.

16. The subway car of any of claims 9-15 wherein each said display monitor is contained within a respective housing, the housing being secured to the subway car but removable as a unit with the video display monitor, the front of said housing comprising a transparent shield overlying the video display monitor screen.

AMENDED SHEET